

U.S. Application No. 10/752,642
Reply to Office Action mailed November 2, 2006

PATENT
790001-2042

Remarks/Arguments begin on page 3 of this paper.

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REMARKS/ARGUMENTS

Reconsideration and withdrawal of the rejections of the instant application are respectfully requested in view of the following remarks, which place the application into condition for allowance.

I. STATUS OF THE CLAIMS AND FORMAL MATTERS

Claims 1-14 are pending in this application. Claims 7-10, 13 and 14 are allowed; claim 4 is objected to; and claims 1-3, 5, 6, 11 and 12 are rejected in the Final Office Action mailed on November 2, 2006.

Initially, the Examiner is thanked for allowing claims 7-10, 13 and 14 and indicating that claim 4 contains allowable subject matter.

II. THE REJECTIONS UNDER 35 U.S.C. § 102(e)

In the Office Action, claims 1, 2, 3, 5, 6, 11 and 12 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent Application Publication No. 2002/0167091 to Iwasaki et al. ("Iwasaki"). The rejections are traversed for at least the following reasons.

As stated in the previous response, as recited in claim 1 of the instant application, one embodiment of the instant invention is directed to a semiconductor device having a multilayer structure comprising:

at least two wiring layers; and
a via contact formed between the at least two layers and made of a metal wiring material which is the same as that of the at least two wiring layers,

wherein the metal wiring material of the via contact contains an additive which is not contained in the metal wiring materials of the at least two wiring layers.

On page 2 of the Office Action, the Examiner alleges that "Iwasaki (e.g., Fig. 1) discloses a semiconductor device, comprising: at least two wiring layers (19, 15); a via contact (17)

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formed between the at least two layers and made of a metal wiring material (aluminum plus copper) which is the same as that of the at least two wiring layers, wherein the metal wiring material of the via contact contains an additive (copper and nickel or silicon, page 2, paragraph [0027] which is not contained in the metal wiring materials of the at least two wiring layers.” Applicants’ attorneys respectfully submit that this characterization of Iwasaki is incorrect.

The Examiner identifies films 19 and 15 of Iwasaki as corresponding to the at least two wiring layers of claim 1 of the instant application. The Examiner also identifies film 17 of Iwasaki as corresponding to the via contact of claim 1. Applicants respectfully submit that these identifications, however, are incorrect.

In response to the arguments set forth in the previous response, as set forth in the “Response to Arguments” section of the outstanding Office Action, the Examiner alleges that the “Applicant does not directly address the merits of the Examiner’s rejection. Instead, Applicant re-interprets the prior art Iwasaki disclosure such that the layers (17 and 23) are designated the wiring layers instead of the Examiner designated layers (15 and 19).” The Examiner points out that the claims are being interpreted broadly, as in accordance with Patent Office procedure and further states, “[t]o that end, the term, ‘wiring layers’ is interpreted broadly. Unless Applicant can show that ‘wiring’ is afforded a special meaning in the specification or in the art, a via conductor will not be interpreted to have a different structure than a wiring, only the orthogonal orientation may be different.” The Examiner further contends that “[l]ikewise, wiring layers may be said to comprise several layers in one. Therefore, in this instance, the outer layers (15 and 19) are as much a part of the wiring ‘layers’ as is the inner conductors (17, 20 or 23) because they combine to form one layer.”

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Applicants respectfully disagree with the Examiner's assertions and submit that the term "wiring" is afforded a special meaning in the specification. For example, claim 11 recites, *inter alia*, "a first metal wiring layer made of a first wiring material, formed in a first wiring groove formed in a first insulating film on a semiconductor substrate" and "a via contact embedded in a via hole formed in the second insulating film, the via contact being made of the same wiring material as the first wiring material, which contain an additive which is not contained in the first wiring material of the first wiring layer." Also, for example, claim 13 recites, *inter alia*, "a first metal wiring layer made of a first wiring material added with an additive, formed in a first wiring groove formed in a first insulating film on a semiconductor substrate" and "a via contact embedded in a via hole formed in the second insulating film, the via contact being made of the first wiring material which contains the additive."

Applicants respectfully submit that these recitations clearly indicate that the claimed "metal wiring layer" is formed in a wiring groove and that the claimed "via contact" is formed in a via hole. Accordingly, as used in the specification, the "wiring layer" should be considered to have a special meaning that corresponds to the layers 17 and 23 disclosed by Iwasaki. Similarly, as used in the specification, the "via contact" should be considered to have a special meaning that corresponds to the via contacts 15 and 19 disclosed by Iwasaki.

Further, the Examiner equates layers 15 and 19 of Iwasaki to the instantly claimed "wiring layers," and equates layer 17 of Iwasaki to the instantly claimed "via contact." In this regard, however, please note paragraph [0026] of Iwasaki which states, "plugs each comprising a main conductive film 20 coated with an adjacent conductive film 19 are formed in contact holes." This indicates that the words "plug" and "via contact" are used interchangeably and have the same meaning in this field of art from a point of view that the plugs and via contacts are

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formed not in the grooves but in the holes. Accordingly, Applicants respectfully submit that the conductive film or layer 19 should correctly be considered a "via contact" and not a "wiring layer." Hence, contrary to the Examiner assertions, Applicants submit that the claimed "wiring layers" correspond to layers 17 and 23 of Iwasaki and the claimed "via contact" corresponds to the via contacts 19 of Iwasaki. Thus, Iwasaki fails to teach or disclose the above-discussed claim limitations.

It is respectfully pointed out that in order for a Section 102 rejection to stand, the prior art reference must contain all of the elements of the claimed invention. *See Lewmar Marine Inc. v. Bariant Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987). Accordingly, because, as detailed above, the relied portions of Iwasaki fail to teach every claim element, the Section 102 rejections must fail as a matter of law. Therefore, Applicants respectfully request that the Section 102 rejections be withdrawn.

For at least the foregoing reasons, Applicants respectfully submit that independent claim 1 patentably distinguishes over the relied upon portions of Iwasaki and is therefore allowable. Independent claims 5 and 11 are similar, or somewhat similar, in scope to claim 1, and are therefore allowable for similar, or somewhat similar, reasons. Further, claims 2-4 that depend from claim 1, claim 6 that depends from claim 5 and claim 12 that depends from claim 11 are allowable as well.

Statements appearing above with respect to the disclosures in the cited references represent the present opinions of the Applicants' undersigned attorney and, in the event that the Examiner disagrees with any such opinions, it is respectfully requested that the Examiner specifically indicate those portions of the respective reference providing the basis for a contrary view.

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CONCLUSION

In view of the foregoing, it is believed that the present application is in condition for allowance. Accordingly, Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Please charge any fees incurred by reason of this response and not paid herewith to Deposit Account No. 50-0320.

Respectfully submitted,
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